#7

Figure 1. Amino Acid Sequences of Murine 1A6 and Human Consensus Sequences of Heavy Chain Subgroup III (Humiii) and Light Chain κ Subgroup I (HumκI).

V_H Domain

```
                1               11              21              31              41
Mouse1A6        EVQLQQSGAE LVKPGASLKL SCTASGFNIK DTYIHWMKQR PEQGLEW I GR
                 **  **   *  *  *    *                 * * *  **     **

HumIII          EVQLVESGGG LVQPGGSLRL SCAASGFNFS ----------WVRQA PGKGLEWVA—

                51 a            61              71              81 a bc         91
Mouse1A6        IDPANDNTIYD PKVQGKATMT ADTSS NTAYL QLNSLTSEDTAVY YCTT
                             ** ** * * *            *    **

HumIII          ------------------A DSVKGRF T IS RDDSKNTAYL QMNSLRAEDTAVY YCTT

                          103           111
Mouse1A6        SGYWFA YWGQGTLVT VSS

HumIII          ---------- --WGQGTLVT VSS
```

V_L Domain

```
                1               11              21              31              41              51
Mouse1A6        DIVLTQSPAT LSVTPGDSVS LSCRASQSIS NNLHWYQQKH SESPRLLIKH ASQ
                 **     **   ***  * * **                      * *** *   *

HumκI           DIQMTQSPSS LSASVGDRVT ITC---------- -------- WYQQKP GKAPKLLIY -- -----

                        61              71              81              91              101
Mouse1A6        SISG I PS RFSGSGSGTD FTLSINSVET EDFGMFFCQQ SNSWPYTFGG GTKLEIKR
                   *                  * * ***    * ***                 *     *

HumκI           ----GVPS RFSGSGSGTD FTLTISSLQP EDFATYYC---- ---------- FGQ GTKVEIKR
```

The CDR residues as defined by both Kabat and Chothia are shown in boldface.

Fig. 2A

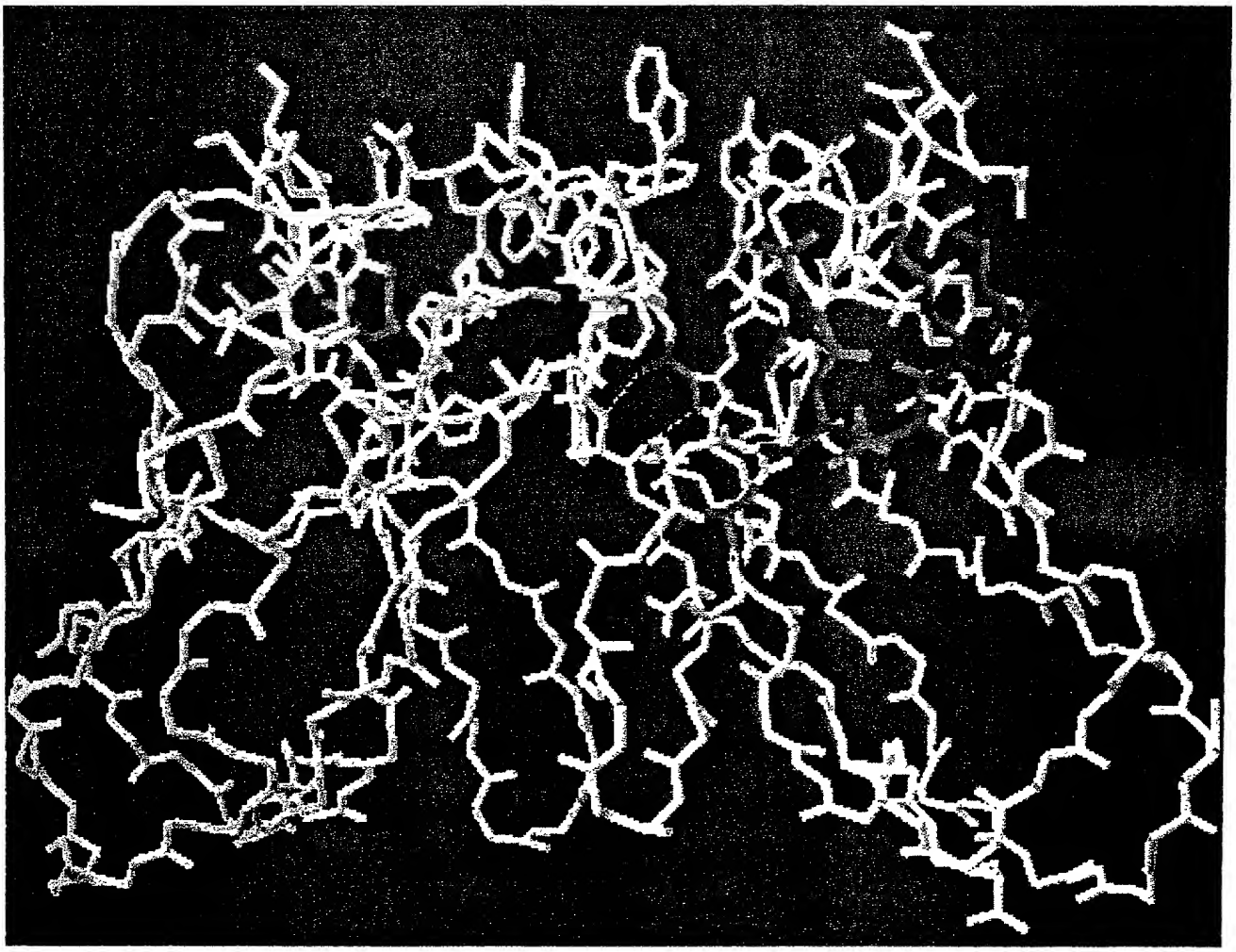


Fig. 2B

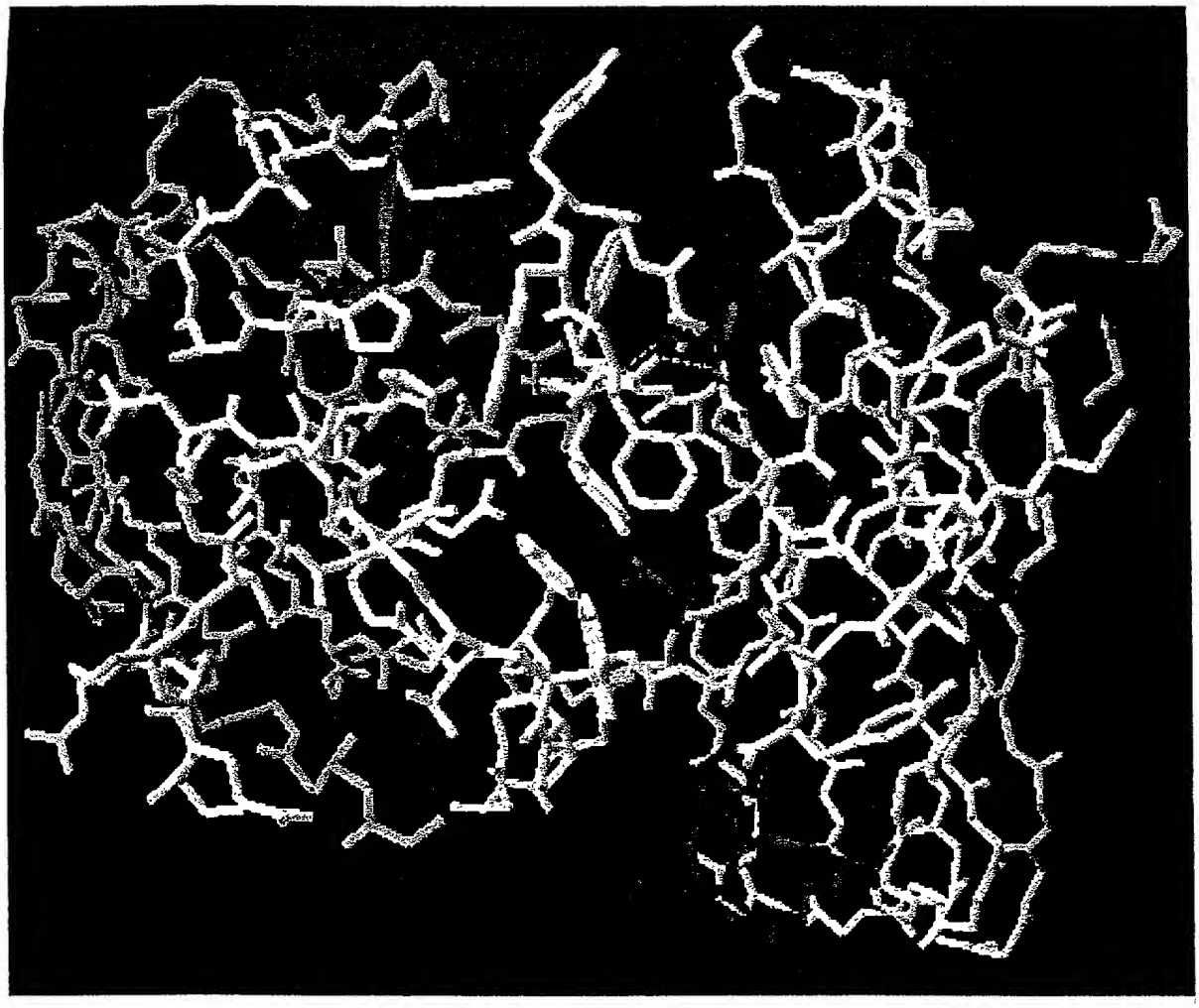
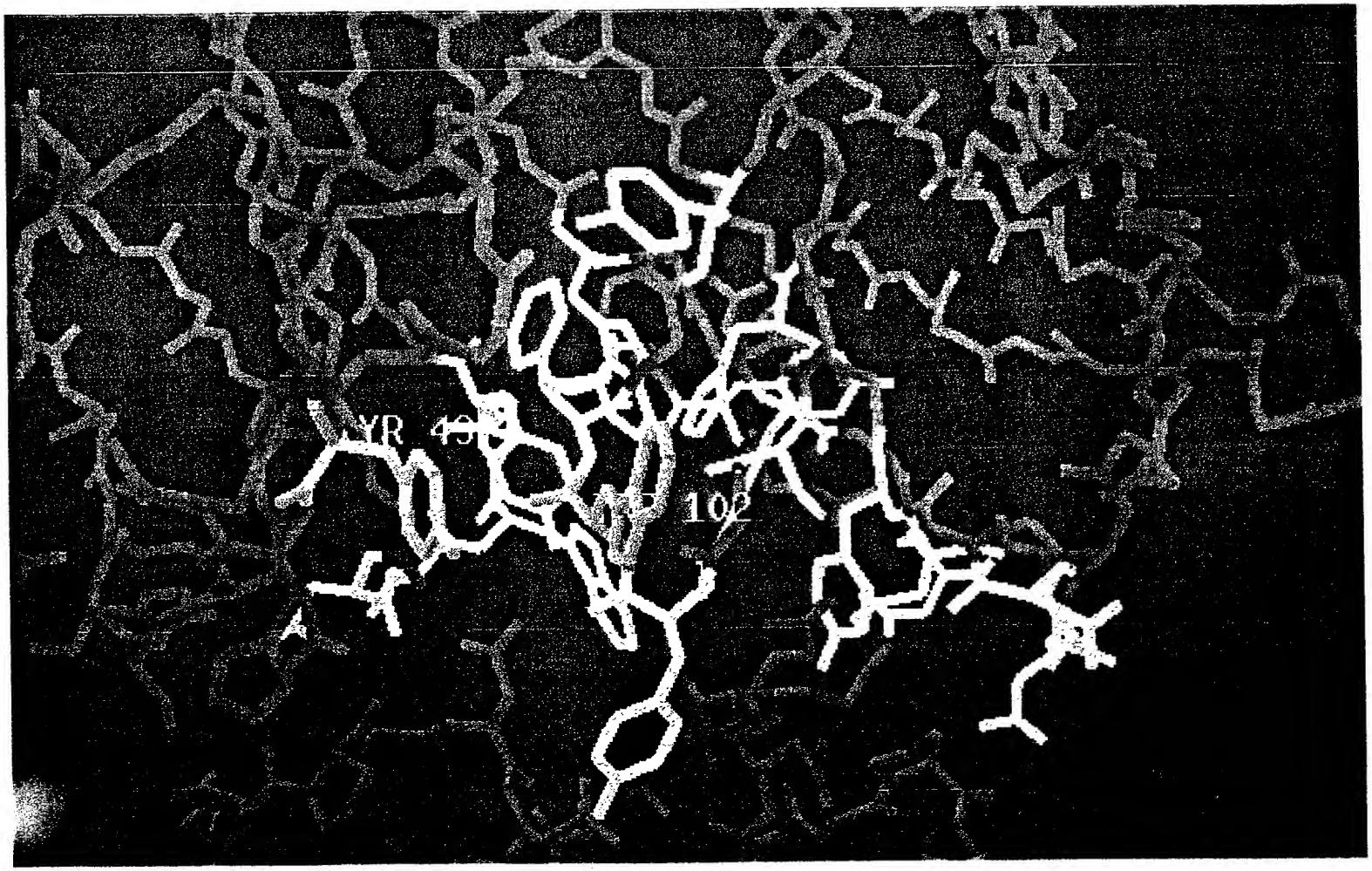


Fig. 2C



09010103 _120301

Figure 3. Amino Acid Sequences of Murine 1A6, Humanized 1A6 (Hum19), and Human Consensus Sequences of Heavy Chain Subgroup III (Humiii) and Light Chain κ Subgroup I (HumκI).

V_H Domain

	1	11	21	31	41
Mouse	EVQLQQSGAE	LVKPGASLKL	SCTAS**GFNIK**	**DTYIH**WMKQR	PEQGLEWI **GR**
	* * * *	* * *	*	* * *	* * * *
Hum19	EVQLVESGGG	LVQPGGSLRL	SCAAS**GFNIK**	**DTYIH**WVRQA	PGKGLEWVA**R**
HumIII	EVQLVESGGG	LVQPGGSLRL	SCAAS**GFNFS**	----------WVRQA	PGKGLEWVA—

	51 a	61	71	81 abc	91
Mouse	**IDPANDNTIYD**	**PKVQG**KATMT	ADTSS NTAYL	QL NSLTSEDTAVY	YCT T
		* * * * *	* *	* * *	*
Hum19	**IDPANDNTIYA**	**DSVKG** RFT IS	SDDSKNTAYL	QMNSLRAEDTAVY	YCTA
			*		*
HumIII	------------------A	**DSVKG** RFT IS	RDDSKNTAYL	QMNSLRAEDTAVY	YCTR

	103	111
Mouse	**SGYWFA** YWGQGTLVT	VSS
Hum19	**SGYWFA** YWGQGTLVT	VSS
HumIII	-------------- --WGQGTLVT	VSS

V_L Domain

	1	11	21	31	41	51
Mouse	DIVLTQSPAT	LSVTPGDSVS	LSC**RASQSIS**	**NNLH**WYQQKH	SESPRLLIK**H**	**ASQ**
	* * * *	* * * *	* * *		* * * * *	*
Hum19	DIQMTQSPSS	LSASVGDRVT	ITC**RASQSIS**	**NNLH**WYQQKP	GKAPKLLIY**H**	**ASQ**
HumκI	DIQMTQSPSS	LSASVGDRVT	ITC------------	-------- WYQQKP	GKAPKLLIY --	-----

		61	71	81	91	101
Mouse	**SISG** I PS	RFSGSGSGTD	FTLSINSVET	EDFGMFFC**QQ**	**SNSWPYT**FGG	GTKLEIKR
	*		* * * * *	* * * *	*	*
Hum19	**SIS**GVPS	RFSGSGSGTD	FTLTISSLQP	EDFATYYC**QQ**	**SNSWPYT**FGQ	GTKVEIKR
HumκI	----GVPS	RFSGSGSGTD	FTLTISSLQP	EDFATYYC----	-------------- FGQ	GTKVEIKR

The CDR residues as defined by both Kabat and Chothia are shown in boldface.

Figure 4. cDNA Sequences of Humanized scFv3 (Hum3) [SEQ ID. 2].

The restriction sites are underlined. CCATGG NCO I SITE; GGATCC BAMH I SITE; GTTAAC HPA I SITE

CGAACCATGGGCGATATCcagatgACCCAATCTCCGtctagcCTGAGCgccAG
TgttGGTgatCGAGTTaccattactTGCCGCGCCAGCCAATCTATCAGTAATAATCTTC
ACTGGTATCAACAAaaaccgggtaaagctCCGaaaCTTCTTATCAAACACGCCTCTCAG
AGCATTAGCGGCgttCCGAGCCGCTTCTCTGGCTCTGGCTCGGGCACGGACTTT
ACCCTTaccATCAGCTCTcttcagccgGAAGACtttGCCaccTATtatTGTCAGCAGTCTAA
TAGCTGGCCGTATACCTTCGGTcaaGGTACCAAGgtcGAGATTAAGCGCGGCGG
TGGCGGTTCTGGTGGCggtggtagcggtggcGGTGGATCCGGTGGCGGTGGCAGCGA
AGTTCAACTTGTTGAGTCTGGTGGCGGTCTGGTTCAGCCGGGTGGCTCTCTGC
GCCTGTCTTGCGCAGCAAGCGGTTTCAACATTAAGGACACCTACATCCATTGG
atgAGGCAAGCTCCGGGTAAGGGTCTGGAGTGGGTGGCACGTATCGACCCGGC
AAACGACAACACCATTTACGATCCGAAGGTGCAGGGCCGTTTTACTatgTCTGC
GGACacCTCTAAGAACACCGCGTACCTTCAGATGAACTCTCTGCGTGCCGAGG
ACACCGCCGTCTACTACTGCACGACCTCTGGCTACTGGTTTGCCTACTGGGGC
CAGGGCACGCTTGTCACCGTCTCTTCTGGTtAaCCC

Figure 5. Protection of HRV15 infection by mouse 1A6 scFv (Ms1) and humanized 1A6 scFv proteins (Hs3, 4, 7, 17, 18, 19 and 21).